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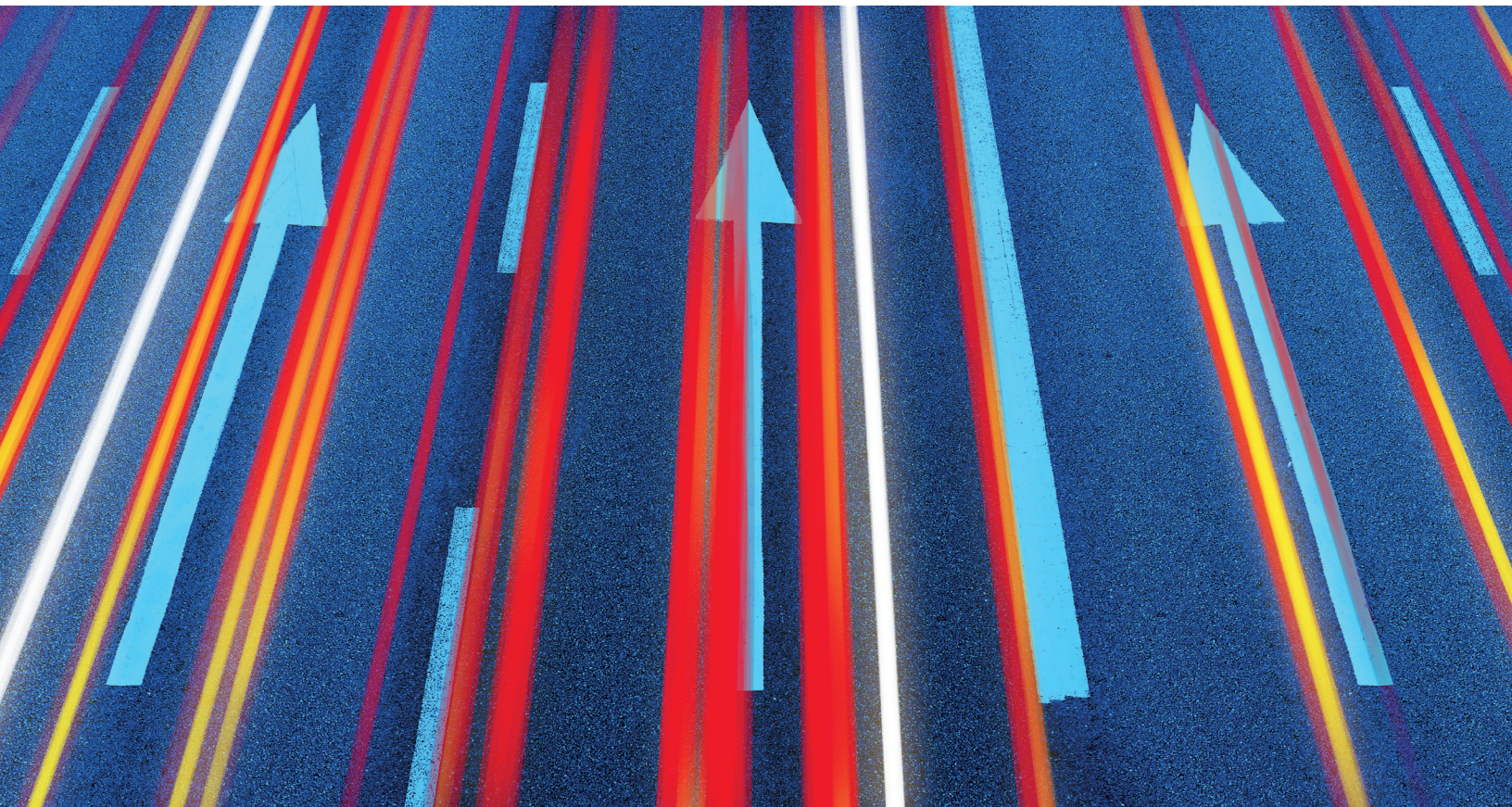
DATA INTELLIGENCE

THE ASG DATA INTELLIGENCE MATURITY MODEL

An ASG Whitepaper



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1 INTRODUCTION

The ASG Data Intelligence Maturity Model provides a framework that outlines the required capabilities and benefits gained at each stage of maturity. As enterprises follow a structured approach, the business value of data is maximized and the associated risk in a changing data environment is minimized.

The role of data has shifted radically. It has long been a supporting resource, providing insight into business operations and performance. Data is now a strategic asset, driving business growth as a key part of digitization strategies. According to a 2018 survey by Harvey Nash & KPMG, 61% of organizations that are effective at using digital technologies see higher revenue growth than their competitors who fail to seize the opportunity or who stumble at compliance hurdles.[1]

The information economy requires companies to become information companies. Information companies know their most valuable asset is their data and must:

- Understand the breadth and depth of data managed through the organization
- Use data lineage, data quality metrics and other Data Intelligence capabilities to establish truth in data
- Reduce the risk of non-compliance with regulations and governance
- Build, govern and maintain trusted data
- Share data across the organization for new insights and improved decision making
- Monetize and harvest the value from their data

[1] https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/06/harvey-nash-kpmg-cio-survey-2018.pdf

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Information companies build and effectively use Data Intelligence. They understand and leverage the knowledge established by analyzing data and metadata from information and applications to identify their source, purpose, use and reliability. Building Data Intelligence enables organizations to build added trust and assess data value. Users can decide how data can be used and how much "truth" is really needed. Data Intelligence helps enterprise organizations fulfill defensive and offensive data strategies by discovering and governing information supply chains that empower stakeholders to find, understand, share and analyze trusted data.

There's an increasing demand for "data democratization" – for data to be available and understandable for the average end user to improve and accelerate decision-making. Properly supported and managed, data democratization is an important element of digital success. Business and IT data users expect data to be automatically available, understandable, and sufficiently trustworthy.

Data Intelligence tools, founded on metadata management, provide a core set of capabilities that can capture understanding, establish trust and make data accessible across the enterprise so that its value becomes part of business success. It's essential to underpin those tools with an organized process. ASG's Data Intelligence Maturity Model describes the paths along which enterprises pass – from the initial awareness of the need for improved data management to proactive data monetization – building data intelligence to support business strategy and requirements.

Many Data Management process models are essentially driven by IT priorities – insisting that steps can only be completed sequentially. ASG's Data Intelligence Maturity model makes no such demand; its focus is on the pressing business needs rather than IT priorities. While the foundational building of the inventory is essential, the 'other' steps need not be completed before moving on to the 'next' step. Metadata-based projects can proceed through varying paths, or in parallel, depending on the objectives and needs of the organization or line of business.

A Dataversity Survey supports this finding that "More than 80% of survey respondents state that Metadata is as important, if not more important, now than in the past." (Emerging Trends in Metadata Management, Donna Burbank, Charles Roe, 2016) Global enterprises are adopting these tools, and they are aiding in the quest to use data – arguably an enterprise's most valuable asset – effectively. However, the facilities of any tool may be less than optimal, and vendors often target their approaches to the product's capabilities, not the customer's needs.

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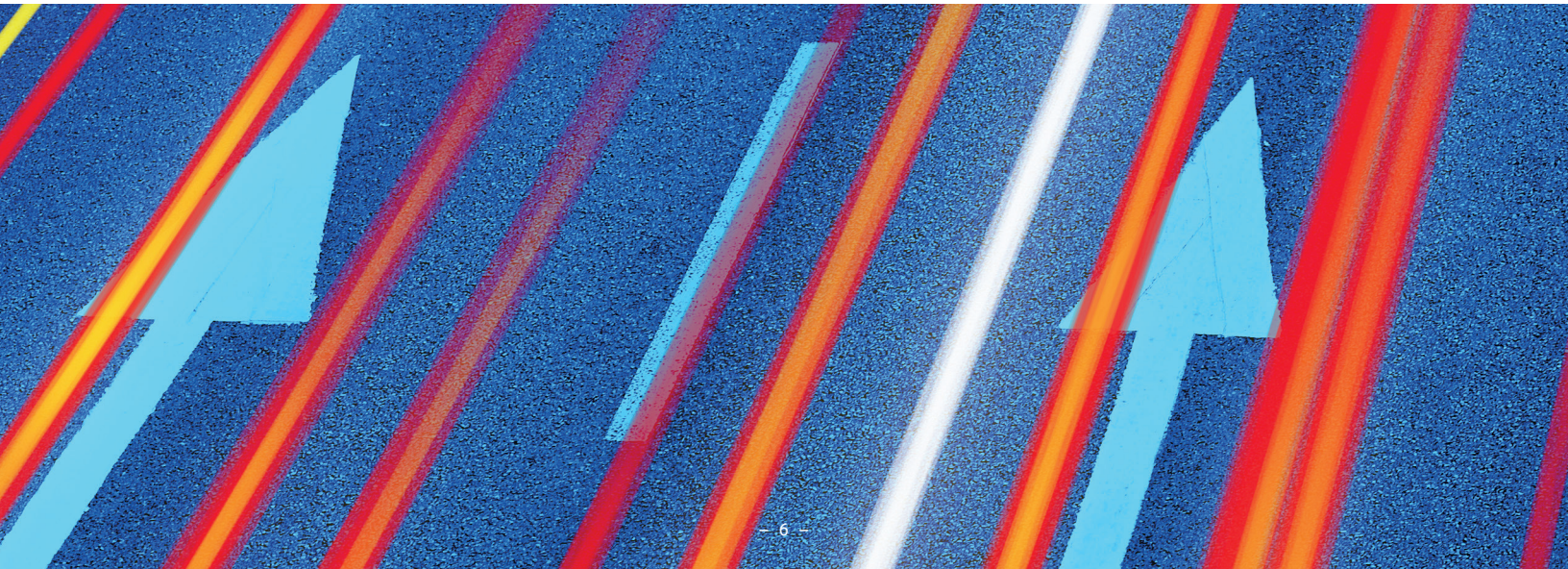
2 DATA OPPORTUNITIES AND RISKS

Data analysis is often viewed as 'managing from the rearview mirror'. However, there is also a forward-looking perspective – managed data is also needed to understand business performance, carry out current operations and explore growth opportunities for the future.

Data is the driver as businesses transform their approach and become information companies. Despite the challenges of data volume, velocity and variety, the task of finding and using the value of data – both indirectly for better business performance and directly to deliver revenue – is essential for success in the information economy.

Defensive data strategies are required to operate the business, maintain truth and trust and manage risk. Offensive strategies are needed to drive the enterprise forward. The value to be gained by balancing the two is an incentive for maturing the state of data management and growing data intelligence in the organization.

- Data creates risk as well as value, particularly in today's increasingly regulated environment. Regulations such as the Federal Reserve Board's FR Y-14 attestation requirement and Sarbanes-Oxley's broader requirement means that data reported publicly must be attested to as accurate, creating pressure to demonstrate the truth in reporting.
- Anyone collecting personal data must define clear terms and obtain permissions and keep the data private and only use it for purposes to which the subject has consented. They must handle personal data securely and report breaches that result in data loss immediately. Non-compliance with regulations such as the General Data Protection Regulation (GDPR) could lead to fines up to 4% of global revenue. The California Consumer Privacy Act (CCPA) allows individuals to file suit against organizations that do not keep their data private, which could also lead to substantial financial and reputational penalties.



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3 MODEL OVERVIEW

Though not every journey to implement and reap value from metadata management is the same, they all start with an awareness of a need to expand and improve processes. The ability to routinely and safely create the maximum economic benefit from data is a primary driver and end state goal. The steps between creating a baseline and proactive monetization will be selected according to immediate business imperatives.

As we lay out the steps to success, it's important to keep in mind the end goal of monetizing the value from data – turning data into profit – either to make better operational decisions or to find the value that could increase the monetary worth of existing products and/or introduce new products to the market.

The ASG Data Intelligence Maturity Model described here establishes the steps that can lead to the knowledge, governance and understanding that supports the monetizing of data. Value is realized at each stage of the process. An ultimate goal is defined, and there's value at each step of the process as an organization's approach to data becomes more organized, rationalized and defined.

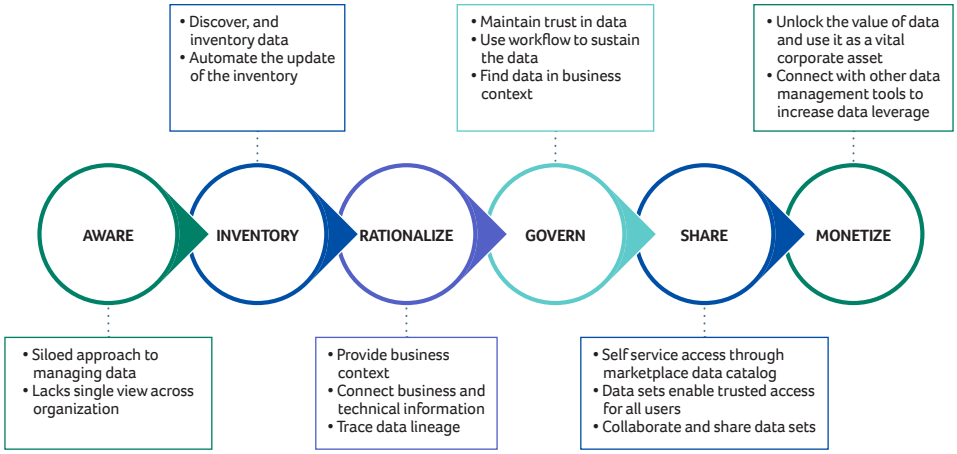
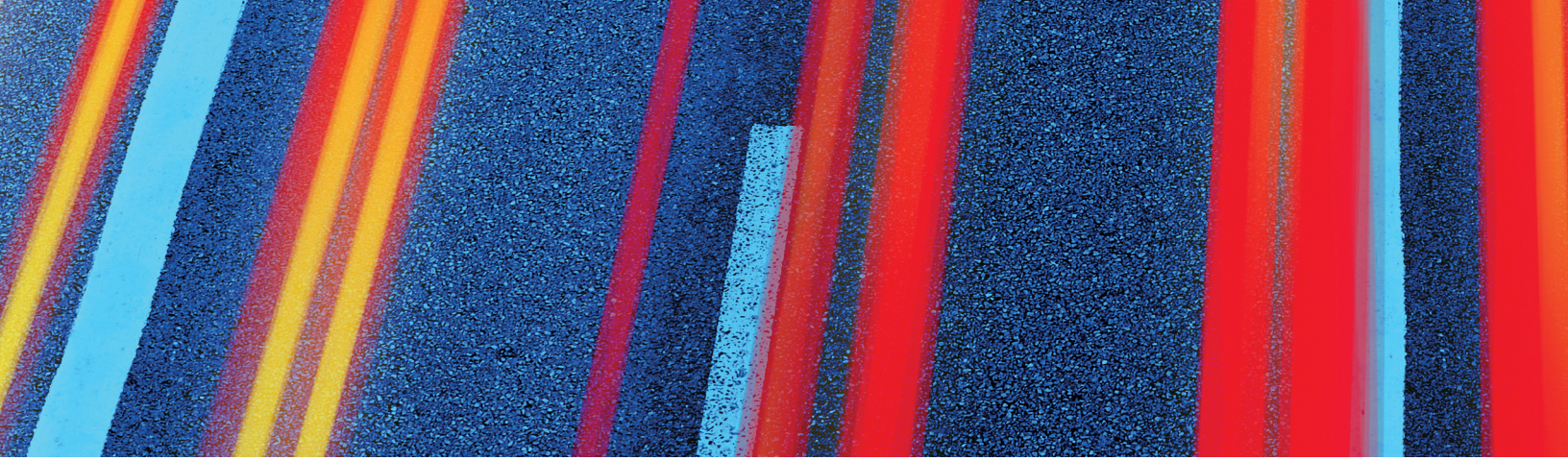


Figure 1: ASG Data Intelligence Maturity Model Overview



4 THE LIMITATIONS OF AN "AWARE" DATA MANAGEMENT ENVIRONMENT

Approximately 70% of organizations have a data governance strategy in place – 30% have not implemented any governance[2]. Those who don't have a data governance strategy – and some who have an established strategy but don't know enough about their data – are in an "aware" state. They have the basic data management structures in place – there is data, there are applications and the organization uses data to run the business. However, the resources are likely within silos, demarcated by department or line of business or other organizational constructs, with no "enterprise-wide" view.

The lack of an enterprise view can lead to redundancies where two parts of the organization keep the "same" data. Data with the same name or truly duplicate data leads to "data bloat" or confusion as to the meaning and use of the data.

The impact for American Fidelity Assurance was immediate and transformative. With data lineage came visibility … The visibility helped to quickly identify both missing modules and redundancies - in one case 464 instances of a single field in 50 different tables and views were reduced to 12. This helped to provide a single, standardized structure to accurately track usage.

[2] The 2018 ASG CIO Report: The Future of Enterprise Data; Democratized and Optimized

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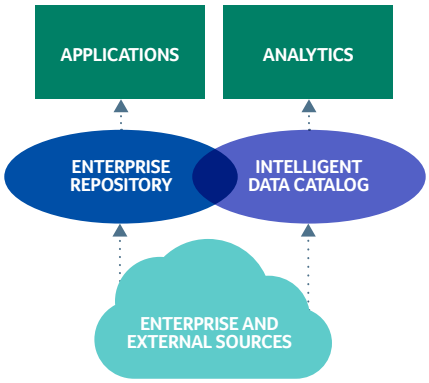
5 STAGE 1 – LAYING THE ESSENTIAL FOUNDATION

Building data management maturity – progressing from the "aware" state – starts with creating knowledge of the "as is" data estate and establishing an automated process to keep it current. A baseline inventory is a prerequisite for further progress. An automated method to discover new data assets and keep the inventory up-to-date is also essential to integrate information from new data sources, applications and business processes.



- Within the desired scope, the inventory process collects metadata from the data sources inside the business and externally.
- Metadata is collected from data store catalogs, and enriched by analysis and the knowledge of subject matter experts.
- The knowledge gathered allows data to be associated with applications and used for analytics.
- Knowing what data is used for allows redundant data to be eliminated and provides the foundation for other data intelligence-based activities.

Figure 2: Building the Foundational Data Inventory

The use of data in business has changed. Rather than relatively few structured sources, organizations now exploit a wide range of internal and external sources – structured, unstructured and semi-structured. The new data sources improve the quality of decision making and help in exploiting new opportunities. At the same time, the volume and variety of new data sources increase the importance of a managed data inventory.

Some data and applications are documented in catalogs and directories and are therefore easy to discover and understand. For other data sources, information can be built through capabilities such as impact and data lineage analysis or added by knowledgeable people providing their input. The inventory supports the identification of redundant data stores which can be eliminated to save costs and minimize risks, as well as providing the base for further activities.

6 STAGE 2 – PROFITING FROM THE FOUNDATION

6.1 SEPARATE PATHS TO MEET CRITICAL PRIORITIES

Once the inventory is created, it becomes possible to move from the essential foundation to consolidate Data Management by implementing defensive and offensive data strategies:

- Data Sharing to make the right data available to the right people as quickly and efficiently as possible and enable collaboration across business units
- Data Governance to manage and protect data assets to establish and maintain generally understandable, correct, complete, trustworthy and secure data
- Data Rationalization to reduce costs, make finding data easier and improve Data Governance

6.2 SHARED DATA

Data Sharing starts with a self-service "marketplace" data catalog from which data consumers can find the right trusted data for the task. The catalog is the knowledge base for the diverse stakeholder needs as self-service data access becomes increasingly important – especially in supporting "offensive" data strategies to drive innovation. It needs:

- Automated data discovery and collection
- Automated tagging of data
- Social rating and recommendation capabilities for the incorporation of "tribal knowledge"
- Data curation – data needs to be formatted, cleaned and organized if it is to be useful

These capabilities support an understanding of how far data can be trusted for analytics – a lower level of certainty may be required than for data governance – while machine learning algorithms may need the same high levels of trustability. Combined with the ability to build subject-specific datasets, integration with Data Science notebooks (e.g. Jupyter) and search capabilities spanning the data lake, the core capabilities enable data sharing, collaboration and curation to maximize data value.

6.3 GOVERNED DATA

Data Governance ensures that the data the enterprise uses can be found, understood, shared, trusted, analyzed and used. The day-to-day operational activities of resolving data issues are grouped together as "Data Stewardship". A sound data governance program requires executive direction, a defined set of stewardship procedures and a plan to execute those procedures. It is not possible to maintain a rationalized data inventory or support any data management use case that needs to be sustained for more than a single project without implementation of Data Governance and stewardship.

For many organizations, Data Governance is the guarantor of data "truth" – i.e., it's essential that its defensibly accurate for CFO attestation. For others, it guides the best use of trusted data for analytic purposes:

- Trusting data depends on understanding information supply chains – using data lineage to know how data moves and is transformed
- Knowledge of data quality that supports the trust in data
- Effective business use of data needs context – connection between business terms and technical data items using a business glossary and visibility of reference data

Data Governance also plays a key role in supporting data privacy management. The inventory process establishes what personal data is where, but it is Data Governance that ensures it is appropriately used and changes are controlled.

Data Governance is essential for data-related change management. It supports the identification and management of critical data and provides for control of versions and snapshots as integral elements of governed change.

Underpinning all these roles of Data Governance is collaboration:

- Definition of roles to define data-related rights and responsibilities
- Management of workflow to coordinate Data Governance tasks, notifying all of those involved as they have tasks to perform
- Subscription and alert capabilities to allow stakeholders to track issues related to data that is important to them
- Maintenance of metrics and reporting and dashboards, to show the status and progress of Data Governance

These capabilities grow in importance as the data estate expands.

6.4 DATA RATIONALIZATION

Data Rationalization starts with building a framework – a way to categorize data assets and associating them with business value – or identifying them as redundant. The Information Supply chain is a way of understanding where data comes from and where it goes. Data Rationalization is about associating data with essential business elements and then eliminating unnecessary duplication. The starting point is a business glossary defining terminology and providing an authoritative description of all business terms. Associating business terms with data elements as the seed for automated technical data lineage allows data assets to be categorized and to be able to detect duplicate and unused data. Data can be categorized in several ways, to support a variety of use cases:

- By line of business, to establish accountability
- By technology – platform, database, and so on – for migration and modernization planning
- By domain, to support analysis
- By security classification, to support privacy compliance

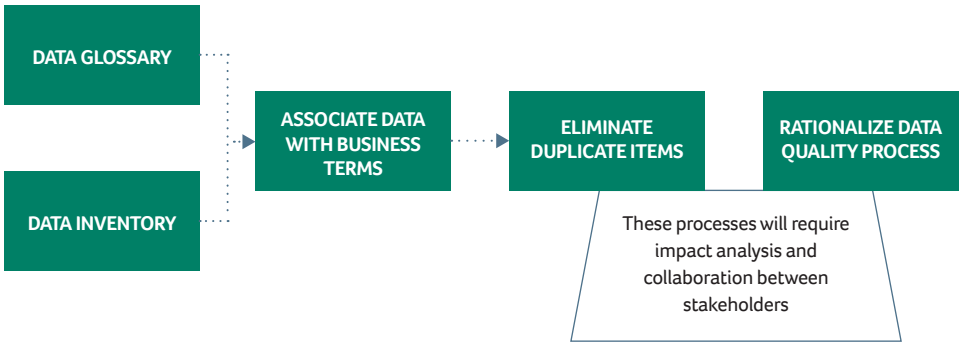


Figure 3: Rationalization Supports Data Sharing and Monetization

Data Rationalization is an important enabler of Data Search and Data Governance. It makes useful data easier to find. Eliminating data that is no longer useful, or that is redundant, reduces the number of options to answer any data-related question. Associating data with business terms simplifies search. Reducing the number of items to be governed simplifies governance activities.

Finally, Data Rationalization reduces storage and management costs. Every piece of data occupies storage – but it also expands the complexity of making changes and increases the number of items to be considered in compliance initiatives. Reducing redundancy simplifies and accelerates every data-related process.

7 STAGE 3 – MATURITY: FROM CONSOLIDATION TO MONETIZATION

According to Accenture[3] "Quantifying data's inherent value is the paradigm shift for organizations today – shifting the mindset from data as a mere byproduct of business to an essential and valuable asset for the future. In 2018 and beyond, extracting the value of data has become a competitive necessity."

Douglas Laney has identified a set of steps to monetizing information (Douglas B. Laney, 2018). The first two are:

- Establish an information product management function tasked with generating measurable economic benefits from available information assets
- Develop and maintain an inventory of possible information assets from throughout the organization as well as from second- and third- party sources

Building the data inventory and supporting data management use cases in the "Consolidation" phase has created the essential information structure to support monetization. Five things are necessary to complete the process:

- Identifying the new 'best' data to drive the business
- Tagging of data assets to associate them with business use
- Addition of metrics to quantify who is using data, for what purpose and the value derived
- Automating capture and tagging of new data sources to identify monetization opportunities
- Succeeding in the ultimate goal of finding and delivering the value of data to internal and possibly external users

Many organizations are already doing some Data Monetization – but the hallmark of maturity is the explicit, intentional and iterative pursuit of value.

[3] https://www.accenture.com/us-en/topic-accenture-value-of-data

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DATA MONETIZATION

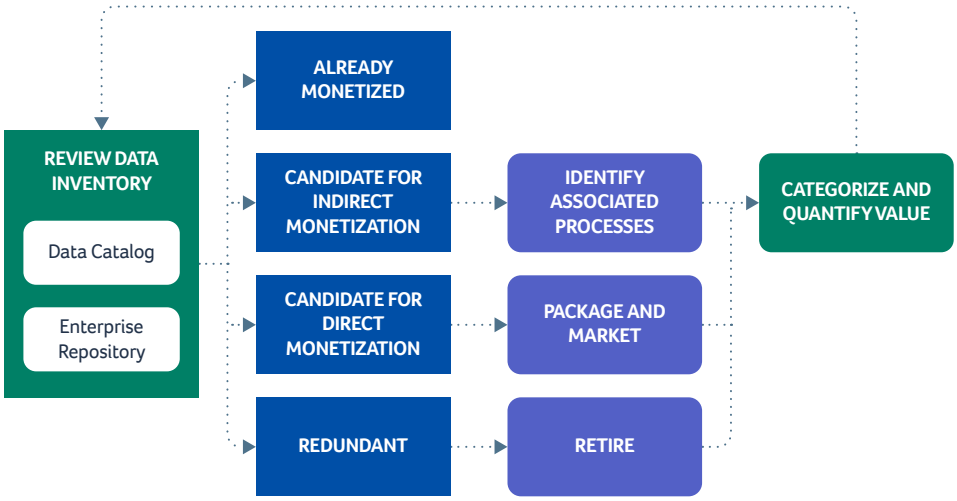
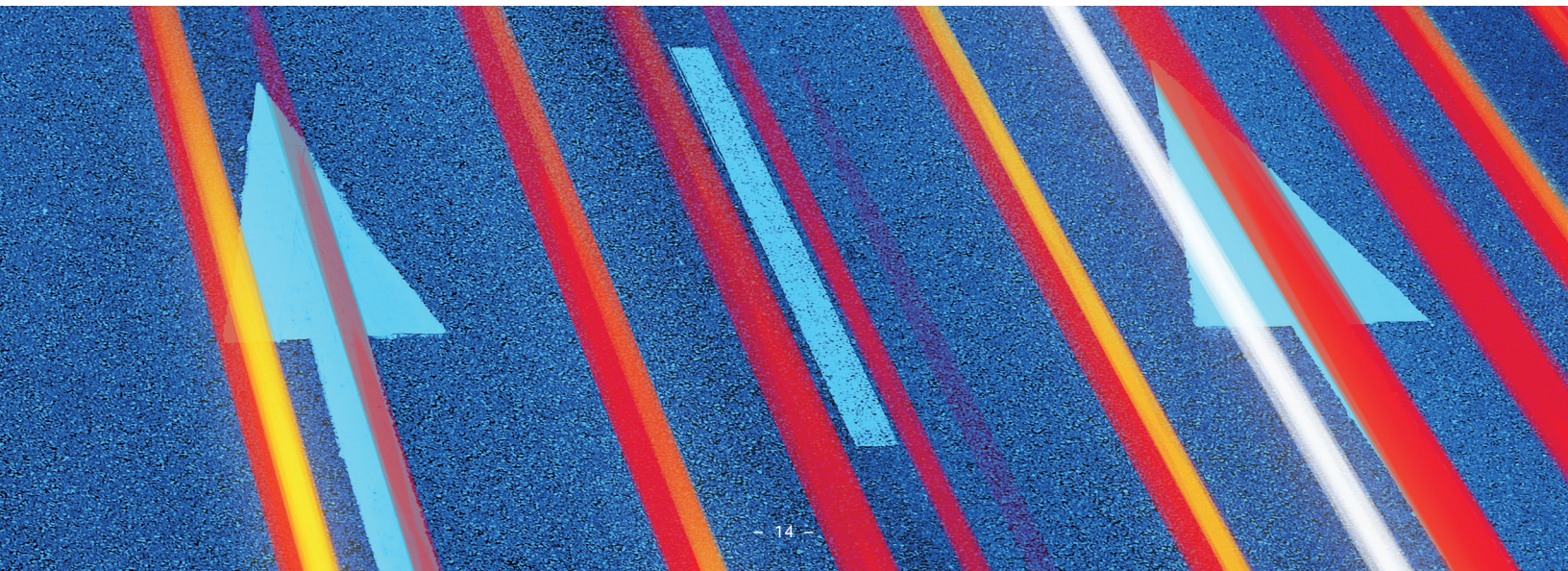


Figure 4: Formalizing the Data Monetization Process



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8 CONCLUSION

The pressures from data growth, stakeholder expectations and regulations will only continue to increase. Building and sustaining a position of digital leadership demands a structured approach to Data Management.

Getting started with ASG's Data Intelligence Maturity Model is straightforward. Consider your assessment:

- Are you 'aware'? Do you have a full data inventory for business areas where maturity is required?
- Do you have rationalization and Data Governance established for your inventory? Can you routinely share data so that new opportunities can be pursued and business decisions improved?
- Do you know which process is most important to current business issues and how to focus on it?
- If you have the inventory and the processes in place, it's time to formalize monetization – and that's the big payoff!

Data storage is cheap – but it's a small part of the data investment. Data acquisition, staffing, and risk management add massively to the cost. Failure to squeeze every penny of data's potential value is the mark of a digital runner-up. Implementing the ASG Data Intelligence Maturity Model will turn potential runners-up into game changing success.

For a simple to follow look at ASG's Data Management Maturity Model download the infographic now.

BIBLIOGRAPHY

Douglas B. Laney, G. I. (2018). Infonomics. New York, NY: Routledge Inc.

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